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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,653	09/14/2000	Earl R Ault	IL-10680	9212

7590

04/24/2002

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/661,653

Applicant(s)

AULT, EARL R

Examiner

Davienne Monbleau

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Information Disclosure Statement

The IDS filed on 11/14/00 has been acknowledged and a signed copy of the PTO-1449 is attached herein.

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show windows, a channel, gain blocks and cells, as described in the specification on page 9 last paragraph. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the thermally induced optical phase errors" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 2828

Regarding Claims 5 and 8, how is the liquid host divided into two equal lengths? How is the liquid host that circulates throughout the system placed in series? Furthermore, the drawings do not show that the fluid flows are arranged in opposite directions.

Regarding Claim 6, the phrase "powerful laser beam" is vague. How is it powerful? What is the power output or the wavelength?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. (U.S. Patent No. 5,307,358) in view of Scheps (U.S. Patent No. 5,307,358). Regarding Claim 1, Kocher et al. teach in Figure 1 a cell for use in a circulating liquid laser comprising a laser chamber/cell (12), a pumping device (22) and a liquid active material. Other types of optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art. Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium may be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength

range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium. (See Scheps column 5 line 66-68).

Regarding Claim 2, Kocher et al. teach a circulation system.

Regarding Claim 3, Kocher et al. teach a closed loop circulation system comprising a pump (24) and a heat exchanger (26).

Regarding Claims 4 and 5, Kocher et al. teach in columns 1-3 that said circulation system prevents the optical distortion from thermal effects. Furthermore the Applicant states in the specification on page 16 lines 1-7 that these features for reducing the thermal effect are known in the art.

Regarding Claim 6-8, the method of a device is not germane to the issue of patentability of the device itself, since the device itself obviously uses the method. Therefore the rejection used on the device in Claims 1, 4 and 5, respectively, applies also to the method of the device.

Regarding Claim 9, Kocher et al. teach in Figure 1 a liquid laser device comprising an optical cavity (10), a pumping device (22), a lasing liquid, and a circulation system with a circulation pump (24) and a heat exchanger (26). Other types of optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art and may be inside the optical cavity. Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium may be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over

Art Unit: 2828

which the laser system operates is determined by the dopant/dopants used in the laser gain medium. (See Scheps column 5 line 66-68).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lempicki et al. (U.S. Patent No. 3,805,187) teach in Figure 2 a liquid laser system comprising a circulation system with a heat exchanger (28), a circulation pump (26) and a lasing cell (30). Tuccio et al. (U.S. Patent No. 3,913,033) teach in Figure 2 liquid laser system comprising a laser pump source (30), a lasing chamber (5), a circulation pump (40) and a heat exchanger (45). Anthon et al. (U.S. Patent No. 4,884,277) teach in column 6 lines 25-33 a laser system wherein said lasant material can be a liquid and in column 9 lines 58-60 that said pumping source is a semiconductor laser diode. Dixon (U.S. Patent No. 5,142,542) teaches in column 9 lines 34-42 that titanium is a suitable active material to dope a lasant material. Dube (U.S. Patent No. 4,134,084) teach in Figure 1 a laser system comprising a liquid (15) having lasing rare earth ions as a dopant, a pump source (26), circulation pump (20) and a heat exchanger (22).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 10:00 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the

Application/Control Number: 09/661,653

Page 6

Art Unit: 2828

organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Danielle Menbleau

DNM
April 18, 2002

Paul IP

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